

D-20,846

C13  
cont.

Furthermore, in the present invention, if two flat headers are used as shown in Figures 2c and 2d, the void volume can be reduced to a few percent of the adsorbent bed, resulting in a recovery of more than 50%, as indicated by case C2 in Figure 4. Thus, the present invention reduces cycle time while significantly improving recovery.

In the paragraph bridging pages 23-34:

Similarly, the void volume has a very important effect on power consumption for fast cycle process because large amounts of power are generally lost in the voids. Simulations indicate that as compared with 70% void case A2, the present invention can reduce power by 16% in case B2 by eliminating the distribution void, and up to 50% in case C1 by using flat headers. It should be understood that the foregoing description is only illustrative of the invention. Various alternative and modifications can be devised by those skilled in the art without departing from the invention. Accordingly, the present invention is intended to embrace all such alternatives, modifications and variances which fall within the scope of the appended claims. More particularly, the system, although presented here with a one or two bed embodiment, can be practiced with more beds. Further, the invention is not restricted to a single adsorbent. Multiple adsorbents can be employed. Also, adsorbents could be layered or mixed within a bed. The adsorbents should not be limited to nitrogen selective adsorbents mentioned above, other adsorbents can be employed as well. Although the process of the present invention is preferably operated near atmospheric pressures and ambient temperatures, it can be applied to a full range of process conditions, e.g., pressures, temperature, and flow rate, etc.

A 4

In the claims:

Please cancel claims 2 and 7-10 without prejudice.

Please amend claims 1, 11 and 16 as follows:

*Sub C*  
*A5*

1. (once amended) A low void pressure swing adsorption system comprised of:

- (a) at least one hermetically sealed vessel containing an adsorbent bed with at least one inlet coupled to the adsorbent bed by way of an inlet header and at least one outlet coupled to the adsorbent bed by way of an outlet header;
- (b) wherein the inlet header and the outlet header of each vessel have a combined volume of less than 10% of the volume of the adsorbent bed of said vessel; and,
- (c) wherein each inlet is coupled with at least one pressure source.

A 6

*S 6*  
*X* 1. (Once amended) A low void pressure swing adsorption system comprised of:

- (a) at least one hermetically sealed vessel containing an adsorbent bed with at least two inlets coupled to the adsorbent bed by way of an inlet header and at least one outlet coupled to the adsorbent bed by way of an outlet header;
- (b) wherein the inlet header and the outlet header of each vessel have a combined volume of less than 50% of the volume of the adsorbent bed of said vessel;
- (c) wherein each inlet has a valve mounted proximate to said vessel; and,
- (d) wherein each valve shares a common pressure source.

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